AMENDMENTS TO THE CLAIMS

Claims 1-28 (canceled).

29. (new): A method for cutting thick sections of cement-based materials, the method comprising:

mutually traversing a surface to be cut with a laser beam at a power density sufficient to produce a depth of molten material having a maximum depth of 10 mm at each traverse;

allowing said molten material to solidify; breaking said solidified material into particles; and

removing said particles by suction means.

30. (new): A method according to claim 29 wherein a plurality of traverses are made along substantially the same cutting path.

31. (new): A method according to either claim 29 wherein the laser beam is unfocused.

32. (new): A method according to claim 29 wherein the laser beam is a parallel beam.

33. (new): A method according to claim 29 wherein the laser beam has a rectangular cross section.

34. (new): A method according to claim 29 wherein the material is removed directly after solidification after each pass.

35. (new): A method according to claim 29 wherein the solidified material is broken up by a hollow crushing tube which also serves as a material extractor conduit.

36. (new): A method according to claim 29 wherein the depth of the molten material at each pass lies in the range from 0.5 to 5 mm.

37. (new): A method according to claim 29 wherein the pressure required for crushing the solidified material is less than 100 MPa.

38. (new): A method according to claim 29 wherein the laser power density lies in the range 300 $W.cm^{-2}$ to 3000 $W.cm^{-2}$.

39. (new): A method according to claim 29 wherein the beam traverse speed lies between 3 $cm.min^{-1}$ and 30 $cm.min^{-1}$.

40. (new): A method according to claim 29 wherein an oxygen jet is applied directly at the beam spot when reinforcing steel bars are being cut.

41. (new): A method according to claim 29 wherein the surface temperature of the material being treated lies in the range 700° C to 2400° C.

42. (new): A method according to claim 29 wherein the vapor-to-melt ratio lies in the range between 0.05 and 3.

43. (new): A method according to claim 29 wherein the material removal rate lies in the region of 150 $cm^{-3}.kWh^{-1}$ for a diode laser and 100 $cm^{-3}.kWh^{-1}$ for a CO_2 laser.

44. (new): A method according to claim 29 wherein the laser is selected from the group consisting of a COIL, Nd:YAG, CO_2 and diode laser.

45. (new): A method according to claim 29 wherein the laser beam is delivered by a fiber optic cable.

46. (new): A method according to claim 29 wherein the laser beam is delivered by a mobile beam delivery system comprising a system of reflecting mirrors.

47. (new): An apparatus for cutting thick sections of cement-based materials in which material is made molten and allowed to solidify, the apparatus comprising

a means for mutually traversing a surface to be cut with an unfocused laser beam at a power density sufficient to produce a depth of molten material having a maximum depth of 10 mm at each traverse;

a means for breaking the solidified material into particles; and

a suction means for removing the particles.

48. (new): An apparatus according to claim 47 wherein the means for breaking re-solidified material comprises a percussive member for crushing the material.

49. (new): An apparatus according to claim 48 wherein the percussive member is hollow and crushed material is removed through the member by suction means.

50. (new): An apparatus according to claim 47 wherein the laser beam is substantially parallel.

51. (new): An apparatus according to claim 47 wherein the laser beam has a circular or rectangular cross section.